TEXTILE TECHNOLOGY DIGEST

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ABSTRACTS

FIBERS A

Effect of twisting on the optical diffraction patterns of single fibers.

P. K. Katti and M. T. Chiplonkar (Delhi Polytechnic). *J. Sci. and Ind. Research (India) 14B:* 253-257 (June, 1955).

Optical diffraction patterns of single twisted fibers of wool, cotton and rayons have been studied. The patterns change appreciably when the fibers are subjected to varying degrees of twist and can be used for studying the changes in the twist of fibers.

Elastic properties of textile fibers. Part 1.

P. S. Nagar. *Man-Made Textiles 32:* 48-51 (August, 1955).

The elastic behavior of fibers under stress is complex and is also influenced by many factors, some inherent in the fiber itself and others arising from the conditions under which the fiber is used or tested. The property of fiber elasticity has been the subject of much research and it is the author's intention in this series of articles to summarize existing knowledge. In this first part, which is mainly introductory, the author discusses the important influence of molecular structure and gives some general information on the mechanical properties of fibers as derived from stress-strain curves.

Elastic properties of textile fibers. Part 2.

P. S. Nagar. *Man-Made Textiles 32:* 54-58 (September, 1955).

In this second instalment, the author discusses the effect of humidity on the tensile properties of various textile fibers and then proceeds to a consideration of the time factor on elastic behavior, outlining the phenomena of immediate and delayed elastic deformation. The relationship between elastic recovery and total stress and strain is discussed and this leads to a consideration of the deformation and energy indices of elasticity. Finally the author describes and explains the importance of the time factor in mechanical testing.

Fibers.

C. S. Grove, Jr., R. S. Casey, J. L. Vodonik. *Ind. Eng. Chem. 47:* 1973-1981 (September, 1955).

A review of fiber developments and fiber literature for the past year. 84 references.

NATURAL FIBERS A 1

Cotton varieties planted, 1951-1955.

Available from U. S. Agricultural Marketing Service, Cotton Division, P. O. Box 8074, Crosstown Station, Memphis, Tenn. Free.

Quality characteristics of the 1954 cotton crop. Part 1.

J. M. Cook (U. S. Agricultural Marketing Service). *Textile Bull. 81:* 60-64 (August, 1955).

Quality characteristics of the 1954 cotton crop. Part 2. Fiber properties.

J. M. Cook (U. S. Agricultural Marketing Service). *Textile Bull. 81:* 75-79 (September, 1955).

Technological reports on standard Indian cottons, 1954.

C. Nanjundayya. *Indian Central Cotton Comm. Technol. Bull. Series A, No. 86:* 1-90 (January, 1955).

The elastic properties of single jute filaments. Part 4. Variation at different stages of plant growth.

K. R. Sen (Indian Central Jute Committee). *J. Sci. Ind. Research (India) 14B:* 342-347 (July, 1955).

14 references.

Plasticity of wool.

P. L. Le Roux and J. B. Speakman (Leeds Univ.). *(Letter to the editor). Nature 176:* 510 (September 10, 1955).

MAN-MADE FIBERS A 2

Properties of the PeCe-fiber and processing of PeCe-yarns in the textile industry.

W. Pelz. *Textil- u. Faserstofftech. 5, No. 6:* 356-357 (1955); *in German.* Through *BCIRA*

35: 592 (1955).

The properties of this fiber (complete insensitivity to water, the same strength in dry and wet condition, resistance to acids, alkalis and other corroding chemicals, resistance to rot and mildew, non-flammability, and high heat-, electricity- and sound-insulating power) make it suitable for the production of filter cloths, protective clothing, awnings and curtains, ropes and nets. An admixture of 5-10 per cent to dress material or 20 per cent to lingerie material imparts to the fabrics a soft handle and a warm feel. The material should not be boiled, but washed at a temperature of 60-65° C.

The reaction between cellulose and formaldehyde: influence on the mechanical properties of viscose rayon fibers.

E. M. Karrholm (Swedish Institute for Textile Research). *Textile Research J. 25:* 756-762 (September, 1955).

The moduli at bending, torsion, and stretching were determined for viscose rayon fiber with different amounts of formaldehyde. A maximum value of all three moduli was obtained at about 5% fixed formaldehyde. The properties at cyclic loading were also investigated. The results indicate that the number of crosslinks are increased at increasing amounts of fixed formaldehyde up to 5%. At higher values, the length of the crosslinks is increased. Formaldehyde polymers, soluble in sodium sulfite, may cause considerable changes in the mechanical properties. 13 references.

Electrical resistance of viscose rayon at low temperatures.

J. F. Clark and J. M. Preston (Univ. of Manchester). *(Letter to the editor). Textile Research J. 25:* 797-798 (September, 1955).

YARN PRODUCTION B

Spinning oils for woolen yarns, cotton imitation yarns and shoddy.

E. Heuser. *Z. ges. Textil-Ind. 57, No. 8:* 410-415; *No. 9:* 500-502 (1955); *in German.* Through *BCIRA 35:* 522 (1955).

The properties of mineral oils, fatty acids, neutral oils, so-called ester oils, and synthetic hydrophilic colloids, their suitability for use as spinning oils, and the efficiency of various emulsifiers are discussed and the most frequently used emulsifier types are reviewed. Methods for testing the removability of the lubricating agents from the fabric and for identification of the spinning oil used are described.

The tendency in the development of cotton spinning machinery.

E. Reuter. *Textil- u. Faserstofftech. 5, No. 4:* 233-237 (1955); *in German.* Through *BCIRA 35:* 522 (1955).

It is shown that all innovations in machine constructions aim at: improving the cleaning and opening of the material, extending the carding process and improving the product, retaining the preliminary and final draw-frame passage but including automatic control devices in order to increase the regularity of roving, eliminating (or reducing the number of) high-draft fly-frames, developing fine-spinning machines with high drafts and high spindle production (producing large yarn packages) and, in viscose production, direct spinning from the cake.

OPENING, PICKING, FIBER PREPARATION B 1

Machinery problems in blending cotton and man-made fibers.

F. Charnley. *J. Textile Inst. 46:* P534-P548 (August, 1955).

The spinning of yarns from fiber blends to give cloths free from weft bars and warp stripes is discussed, and descriptions are given of opening-room machinery specifically designed for blending. The theory of fiber blending is touched upon, and results of preliminary experiments designed to test the theory are described. 6 references.

CARDING AND COMBING B 2

From hand carding to autocount.

H. Lemon (Wool Industries Research Association). *Texture 2:* 101-107 (September, 1955).

A brief account of the history of wool carding.

Wool spinning. Part 3. Some aspects of production control.

B. Jowett. *Wool Rev. 27:* 39 (September, 1955).

The productivity and costs are considered for wool cards.

Improved type card deflector plate.

Textile Wkly. 56: 938, 940 (September 23, 1955).

There are three advantages in the slotted deflector plate: (1) it prevents a build-up of sand, therefore more sand is removed over a period, (2) it keeps the taker-in grid clear, (3) it provides an extra cleaning point.

DRAWING AND ROVING B 3

Some observations related to the problem of fiber draft.

O. Konig. *Textil-Praxis 10, No. 6:* 543-546 (1955); *in German.* Through *BCIRA 35:* 595 (1955).

This paper supplements a previous article showing that, apart from special simple cases, the problem of fiber draft cannot be solved by general differential equations. The term ideal draft is introduced and a new method is developed for determining the drafting efficiency by calculating the draft quality factor. Brief reference is also made to the peculiarity of the quality factor of Martindale.

More uniform drafting.

A. Danselme. *Industrie Textile:* 259-261 (April, 1955); *in French.* Through *BCIRA 35:* 559 (1955).

In contrast to the usual drawing rollers with well-defined nip between the rollers, the device described comprises an intermediate nipping zone, which acts as drag or retarding zone and consists of an upper roller whose load is limited to its own weight. This roller rests, at a uniform or almost uniform pressure, on two lower rollers (with considerably smaller diameters than the top roller) rotating at the same or different speed. The top roller of the intermediate zone is provided with an elastic cover (leather, natural or synthetic rubber, etc.), and the bottom rollers, if rotating at the same speed, can be joined by means of a leather traveling band whose tension may be adjusted, if necessary, by means of a pressure roller. The free length of the fiber band can be adjusted in front and in the back of the intermediate zone, according to the mean length of the fibers. Owing to this drag or retarding zone, the device is not subjected to sudden changes in velocity and very uniform drafting is obtained.

Examination of the processing technique on the cotton draw frame.

R. Wagner. *Textil-Praxis 10, No. 5:* 428-433 (1955); *in German.* Through *BCIRA 35:* 559 (1955).

In order to obtain optimum results on the draw-frame, an investigation was carried out with regard to the position of the rollers (distance between the third and fourth roller), the distribution of individual drafts, weighting of the top roller, and fluting of the bottom roller. It was found that the Shirley draft distribution with normally fluted rollers makes it possible to obtain more uniform slivers on the existing machines, provided that attention is paid to the adjustment of the nipping-point distances in the individual drafting zones.

The dependence of slip-stick characteristics of slivers and rovings upon fiber properties, processing methods and special treatments.

H. Stein. *Textil-Praxis 10, No. 6:* 527-533 (1955); *in German.* Through *BCIRA 35:* 595 (1955).

Diagrams are given and discussed to show that the slip-stick phenomena occurring during drawing of slivers and rovings depend not only upon the nature of the material examined (staple length, fiber fineness, surface characteristics and crimp) but are affected also by brightening agents, dyes and impregnating agents.

Elongation and draft measurements on rovings.

H. Stein. *Z. ges Textil-Ind. 57, No. 12:* 714-720 (1955); *in German.* Through *BCIRA 35:* 560 (1955).

In order to be able to adjust the twist on the speed frame for each material to be processed, it is necessary to know the adhesive forces and draft characteristics of the roving produced. It is shown how these forces can be determined on the continuously running roving, and how additional data as regards the magnitude of the developing drafting forces can be obtained by using the elongation tester, type Dynagraph, with an electric measuring device. These forces depend to a large extent upon the material and affect the processes on the draw frame.

Checklist for roving frames.

J. E. Allen. *Textile World 105:* 130-131 (September, 1955).

Starting from the machine condition, the table lists what processing trouble results and the remedy. Starting from the result, the table lists the condition that caused the trouble and the remedy.

The irregularity of materials drafted on cotton spinning machinery and its dependence on draft, doubling and roller setting. Part 1. The speed frames.

B. Cavaney and G. A. R. Foster (British Cotton Industry Research Association). *J. Textile Inst. 46:* T529-T550 (August, 1955).

The irregularity of materials drafted on cotton spinning machinery and its dependence on draft, doubling and roller setting. Part 2. The spinning frame.

S. L. Anderson and G. A. R. Foster (British Cotton Industry Research Association). *J.*

Textile Inst. 46: T551-T564 (August, 1955).

This paper describes measurements designed to discover how the irregularity introduced during drafting on cotton spinning machinery depends on the processing conditions and upon the properties of the fibers. Empirical relations are given for the added irregularity introduced during drafting as a function of the count or hank number of the material entering the rollers, the draft, the number of ends and the roller setting, and the implications of these relations are discussed. Part 1 deals with the results obtained on the slubbing and intermediate frames, and briefly discusses their application to the checking of theories of drafting. 12 references. Part 2 describes a more limited series of measurements on the spinning frame, and compares the results with those obtained on the intermediate frame. 4 references.

SPINNING, WINDING, TWISTING B 4

Effect of the spinning process on streakiness of satin.

L. G. Barabanov. *Textil-Praxis 10, No. 6:* 534-539 (1955); *in German.* Through *BCIRA 35:* 595 (1955).

The term streakiness is defined and its causes are investigated, particularly the effect of periodically occurring yarn irregularity. The conditions arising as a result of the vibrations in drawing rollers (displacement of the effective nipping line to the back or front) are examined in detail and recommendations are given for the elimination of these faults.

Package profile and traverse design on spinning machines.

L. Cavallaro. *Skinner's Silk and Rayon Record 29:* 984-987 (September, 1955).

A theory is evolved for application to the solution of the problems involved in the construction of packages with variable traverse speed. The following are discussed: basic considerations and relationships, designing a traverse speed diagram to produce a given package profile, cam traverse, hydraulic traverse, predicting package profile from a given speed diagram, and typical calculations and results. Diagrams, equations.

Rationalization in cotton spinning by the short spinning process.

R. Locker. *Z. ges. Textil-Ind. 57, No. 12:* 721-724 (1955); *in German.* Through *BCIRA 35:* 560 (1955).

The best known short spinning processes, e.g. the Baldus-Pross method, division of the sliver in the draw-frame, high-draft speed frames, and the can-spinning process, are discussed. The economy effected in machinery and spinning costs, provided that attention is paid to the regularity of the lap and perfect performance of the carding machine, is pointed out.

Processing properties of man-made fibers and mechanical conditions for obtaining satisfactory yarn regularity.

W. Meyer. *Textil-Praxis 10, No. 5:* 444-446 (1955); *in German.* Through *BCIRA 35:* 560 (1955).

It is shown that, when spinning man-made fibers, optimum regularity is obtained only if the spinning process and machinery used are adapted to the nature of the staple fiber to be processed.

New findings in the spinning of staple fiber.

A. Wilhelm. *Textil-Praxis 10, No. 5:* 434-437 (1955); *in German.* Through *BCIRA 35:* 560 (1955).

Some essential data, found at the German Research Institute in Reutlingen during spinning of staple fiber, are reported. The regularity of the spun products was found to be the most important quality factor and it is, therefore, necessary to maintain or even improve the degree of regularity when increasing the draft (shortening of the 3-roller spinning process). The changes in irregularity after each passage can be regarded as criteria for the drafting efficiency. Evaluation of irregularity is discussed, with reference to the slip-stick behavior of staple fibers and the effect of brightening agents.

End breakages in worsted spinning. Part 6.

P. P. Townend and L. T. Yu. *Textile Recorder 73:* 61-63 (September, 1955).

The sixth article in this series describes an investigation into long-term variations in yarn count and how small variations in count effect the end breakage rate. Special attention is given to the significance of twist.

Studies on spinning rings and travelers.

K. Fujino and Y. Shimotsuma (Kyoto Univ.). *Textile Research J. 25:* 799-811 (September, 1955).

In this report, various characteristics of a spinning ring and traveler are mainly experimentally surveyed. Part 1 covers experimental methods, which include static tests and dynamic tests. Part 2 deals with friction and wear. Friction and wear are important aspects of working characteristics, and they are surveyed in a testing machine and a spinning machine. Working characteristics de-

pend on static characteristics and working conditions. A relationship between them has been experimentally discovered and is partly described in form of experimental formulas. Compared with general machine parts, a ring and traveler are subjected to severe working conditions (e.g., speed: 10-30 m/sec; load: 50-200 g). 7 references.

Mechanism and shape of travelers.

A. Ternier. *Industrie Textile:* 345-347 (May, 1955); *in French.* Through *BCIRA 35:* 560 (1955).

The properties of a traveler are claimed to be improved (even course, less frequent breakages and more uniform winding on to the bobbin) by displacing the center of gravity and making it on one side heavier than on the other. Such a traveler (produced by the Manufacture Alsacienne de Produits Metalliques) does not differ appreciably from the known types; it comprises a straight center part to which are attached two arms, one of which is shorter than the other and ends in a straight line. The second traveler described was designed for use with a horizontal ring for wet-spinning of flax.

Automatic mounting of travelers on the rings.

M. Mathis. *Industrie Textile:* 266-267 (April, 1955); *in French.* Through *BCIRA 35:* 560 (1955).

The device described (developed by the Comptoir des Textiles Artificiels, Viscose Francaise and Givet-Izieux) comprises a pistol-like mechanism containing a series of travelers lying side by side. When placed on the ring, one traveler is seized, and pushed against and on to the ring. After the traveler has been mounted, the apparatus can be removed immediately.

YARNS B 5

A study of blended woolen structures. Part 1. Statistics of the ideal random blended yarn.

M. J. Coplan and W. G. Klein (Fabrics Research Laboratory). *Textile Research J. 25:* 743-755 (September, 1955).

This is the first in a series of reports on an experimental study of the effect of blending in woolen fabrics. The program was initiated with an examination of the distribution of the fibers in a pedigreed series of wool-nylon and wool-viscose woolen yarns. Evaluation of the blend uniformity in these yarns is the subject of a subsequent report. This first report attempts to define the statistics pertinent to the problem of attaining blend uniformity in any ideal two-component yarn. 16 references.

U. S. production of man-made yarns: an annual survey.

Modern Textiles Mag. 36: 57-63 (September, 1955).

Data (including tables) are given on production of filament yarns, staple fiber and tow, and metallic yarns.

Bulked yarn problems.

Textile Ind. 119: 104-108 (October, 1955).

Stretch-bulk, nonstretch-bulk, and high-torque yarns present unique problems of manufacture and use. Suggestions are made to help in handling and understanding them.

Modified filament yarns. Part 2.

Man-Made Textiles 32: 48-53 (September, 1955).

Taslan textured yarns are discussed in detail as a third major system of textile materials, morphologically different from both the staple and the continuous filament systems.

A handbook of twisting. Chapter 6, Part 1. Effect of twist on product life.

N. Truslow (United States Rubber Co.). *Textile Bull. 81:* 98-101 (September, 1955).

Delwin—the Canadian multiple-core yarn.

M. L. Schwartz. *Textile Bull. 81:* 79-81 (September, 1955).

The development, applications, performance, and finishing of the new Canadian multiple-core yarn (named Delwin) are discussed.

FABRIC PRODUCTION C

WARPING, SLASHING, YARN PRODUCTION C 1

Enzymic desizing.

W. Schnupp. *Textil- u. Faserstofftech. 5, No. 6:* 381-382 (1955); *in German.* Through *BCIRA 35:* 599 (1955).

Methods and equipment for desizing with bacterial amylases are reviewed. All the desizing processes require a well-swollen starch layer and thus high desizing temperatures; the bacterial amylases used, therefore, must have a high resistance to heat and must attack the starch fairly rapidly.

New problems and developments in sizing.

H. Gensel. *Textil-Praxis 10, No. 6:* 552-557 (1955); *in German.* Through *BCIRA 35:*

596 (1955).

Recent developments and innovations in warp-sizing of cotton, spun-rayon, and blended yarns are reviewed and popular commercial products are discussed. Reference is also made to sizing of rayon in hank- and warp-form, sizing of yarn from synthetic and glass fibers and the preparation of wash resistant sizes. Methods for testing sizing agents and progress in the construction of sizing machines are also discussed, with reference to the patent literature and publications. 31 references.

Utilization of tamarind seed pectin in textile industries.

G. R. Savur. *Indian Textile J. 65:* 547-549 (June, 1955).

Uses of tamarind seed pectin in sizing, desizing, printing, rubber, plastics, etc., are surveyed. 80 references.

The importance of squeezing pressure reduction during the slow running of warp sizing machines.

E. Michelen. *Textil-Praxis 10, No. 6:* 558-560 (1955); *in German.* Through *BCIRA 35:* 596 (1955).

The effect of slow running of the sizing machine on the uniformity of sizing is investigated. Experimental results show that the abrasion resistance during this period decreases by 30-40 per cent. The sizing effect can be improved by reducing the pressure of the squeezing roller. Various devices and their mechanisms are described.

Sectional warping on the large roller. Correct order of the warped sections.

V. Luzet. *Rayonne et Fibres Synthet. 11, No. 5:* 667-670 (1955); *in French.* Through *BCIRA 35:* 562 (1955).

In order to avoid sinking-in of the different yarn layers of the same yarn section, all the layers are slightly displaced in one direction and the section finishes, at the side where the next section is wound on, in a conical surface. This arrangement, which is effected by placing well-polished metal wedges at a certain angle on the lath of the warping cylinder, makes it possible to place two consecutive sections side by side without gaps between, or overlapping of, the threads. After the wedges have been fixed at a suitable angle, the displacement of the beam-carrying runner must be adjusted very accurately so as to avoid faulty warping.

Introduction of high speeds in rewinding of warp yarn.

P. V. Belishev. *Tekstil. Prom. 15, No. 3:* 20-21 (1955); *in Russian.* Through *BCIRA 35:* 561 (1955).

Experiments have shown that the yarn quality is better after rewinding at a speed of 1,000 m/min, because the extent of deformation depends not only upon the tension but also on the period for which the yarn is subjected to the stress. The duration of the stress affects the warp yarn both in preparatory weaving processes and during weaving itself. As regards physico-mechanical properties, high-speed rewinding appears, therefore, desirable.

The history of winding and warping. Part 3. Developments in Great Britain (2).

W. English. *Textile Recorder 73:* 63-65 (September, 1955).

The warping mill—prevention of yarn overriding; winding—first stages following wheel winding; some early patent specifications, yarn guide motion, and friction-driven spindles are discussed.

Improvement in precision cross-winding.

Rayonne et Fibres Synthet. 11, No. 5: 727-732 (1955); *in French.* Through *BCIRA 35:* 561 (1955).

The new semi-automatic precision winders described (Sahm-Bikomat and Sahm-Mikromat) for cross-winding of cones with straight or oblique base, respectively (double cones or pineapple cones) work with great speed and are suitable for rayon or synthetic fiber yarns.

WEAVING C 2

Double-face carpet weaving.

A. Crossland. *Textile Recorder 73:* 56-60 (September, 1955).

An account of plain Wilton manufacturing by the double-face method and a description of the Wilson and Longbottom loom.

How to eliminate scattered cloth defects.

W. C. Westbrook. *Textile World 105:* 124-125 (September, 1955).

Most defects in woven cloth occur regularly. But a few defects don't follow a regular pattern; they crop up only occasionally. For that reason, they are hard to control. By planning ahead to control these scattered defects, up to 21% of total weave-room seconds can be eliminated.

Speeds of Jacquard machines in the weaving mill.

H. Maier. *Textil-Praxis 10, No. 5:* 460-463 (1955); *in German.* Through *BCIRA 35:* 562 (1955).

The maximum speed obtainable on single- and doubt-lift Jacquard machines is discussed with reference to different machines and varying heights

of shed.

Automatic looms.

M. M. Tiwari. *Indian Textile J. 65:* 545-546 (June, 1955).

A general discussion of the advantages and features of automatic looms.

The Schonherr Buckskin loom.

A. Lang. *Textil-Praxis 10, No. 6:* 566-570 (1955); *in German.* Through *BCIRA 35:* 597 (1955).

Shuttle change box motion control by means of tappet drives.

J. Schneider. *Z. ges. Textil-Ind. 57, No. 12:* 738-748 (1955); *in German.* Through *BCIRA 35:* 563 (1955).

In the previous article, the author discussed variations in the loom construction of Knowles dobby motions. In this paper, another group, the tappet drive, is reported whose advantage lies in the fact that the usual traverse motion of the individual drive components is replaced by a rotary motion of the tappet. The elementary construction of the tappet drive and the transmission from the eccentric sheave on to the change box are in all drives the same; the difference between the various types described lies only in the drive of the tappet and in its control.

A study in loom fixing. Part 3.

F. D. Herring. *Textile Bull. 81:* 82-84 (September, 1955).

Intermittent stopping and filling motion are discussed.

Unusual weft insertion.

Textile Wkly. 56: 704-705 (September 2, 1955).

Shuttles are replaced by jets of air and water in the Czechoslovak Kovo looms. The working of the looms is described and illustrated with diagrams.

Warp breakage control on the loom.

J. Schneider. *Melliand Textilber. 36, No. 6:* 552-558 (1955); *in German.* Through *BCIRA 35:* 563 (1955).

Mechanical and electric warp stop motions with droppers (for silk, wool and cotton) and heald stop motions are described and illustrated.

Improved shuttle.

V. A. Sumkin. *Tekstil. Prom. 15, No. 3:* 45-46 (1955); *in Russian.* Through *BCIRA 35:* 562 (1955).

In the shuttle, described and illustrated, the two shuttle eyes are replaced by a straight aluminum tube (internal diameter 6 mm). The planes of the tube-ends are not perpendicular but at predetermined angles to its axis. The openings which serve as eylets have an elliptical form; their area is greater than that of the cross-section, thus facilitating the entry and exit of the thread. The charging time of the shuttle is claimed to be reduced by 37 per cent as compared with other constructions, the number of weft breakages remaining unaffected.

A strict control of yarn tension on the weaving loom.

L. Leblanc. *Industrie Textile:* 281-285 (April, 1955); *in French.* Through *BCIRA 35:* 563 (1955).

The phenomena involved in dynamic warp-tension measurements are discussed and a tensiometer is described which consists of a holder containing the illuminating device (two cylindrical cells, a circuit breaker and a bulb) and a casting housing the dynamometric components. For measuring the warp tension, the tensiometer must be completely immobile, fixed to a stable base independent of the loom. The method, measures to be taken, and special cases are discussed.

Weaving defects. Part 6.

C. O. Cronic. *Textile Ind. 119:* 128-129 (October, 1955).

Harness skips.

Relationship between productivity and warp yarn breakage in automatic weaving.

G. Galassi. *Riv. Tessile Aracne 10, No. 3:* 281-285; *No. 4:* 411-415; *No. 5:* 547-551 (1955); *in Italian.* Through *BCIRA 35:* 585 (1955).

The main causes of breakages, depending upon (1) the yarn quality and mode of production, (2) the bobbin change, and (3) mechanical factors associated with faulty loom performance, are reviewed and the calculation of production costs, based on the production time (waiting time plus working time), is discussed. Tables are given listing data relevant to loom stoppage caused by yarn breakages and to the calculation of weaving costs (cost efficient).

A simple weft detector.

J. Belin. *Industrie Textile:* 285-286 (April, 1955); *in French.* Through *BCIRA 35:* 563 (1955).

The device described for detecting the moment at which the pirn in the shuttle is almost empty and for stopping the loom consists of a carrier, fixed near one end of the slay and connected with the loom stop motion. Each time the pirn arrives

at the slay end adjacent to the weft-detecting device, a finger fixed on one arm of a crank lever enters the opening in the lateral wall of the slay and comes into contact with the weft yarn on the pirn. When the latter is nearly empty, this contact does not take place and components of the device are in turn actuated to stop the loom. The device is easily adjusted.

Continuous weft supply to the Lancashire loom.

Textile Merc. 133: 494-496 (September 16, 1955).

A new attachment is described which eliminates pirns and cops.

KNITTING C 3

The elasticity of ladies' stockings.

E. Heukers and A. Bakker. *Enka Breda Rayon Rev. 9:* 121-132 (August, 1955).

The elasticity of 13 pairs of nylon stockings of different constructions was studied. The evidence shows that the elasticity of stockings knitted with few courses and many wales improves. If stockings are found to be insufficiently elastic, the simplest remedy is to reduce the number of courses. A better means of increasing elasticity is to knit on a machine of finer gauge. The effect of changing the thread tension under which the stockings are knitted upon their elasticity is almost negligible.

How to use statistical controls for hosiery lengths.

A. Glaskin (Hosiery and Allied Trades Research Assn.). *Textile World 105:* 118-119, 210, 212 (September, 1955).

Three useful methods of length control are by: (1) frequency diagrams to show variations in lengths, (2) scatter diagrams to show correlation between gray and finished hosiery, and (3) control charts to indicate individual heads out of line.

F.N.F. 168-inch warp knitting machine.

F. N. F. Ltd. *Textile Merc. 133:* 363-365 (August 26, 1955).

Features of the machine are described and illustrated with photographs.

FABRICS C 4

Variability of wool content in part wool blankets.

E. Horowitz and W. S. Connor. *ASTM Bull. No. 208:* 42-45 (September, 1955).

A variety of samples tested from two mills showed important sources of variation to be looms and batches. 4 references.

Black specks and stains in the fabric.

A. Agster. *Textil-Praxis 10, No. 5:* 464-468 (1955); *in German.* Through *BCIRA 35:* 576 (1955).

These defects in the woven fabric may be due to fragments of husk, stem, leaf and capsules, lubricating oil, and tar. Differentiation between the various spots and their origin are discussed and their characteristics are summarized in a table.

Design in woven structure. Part 34. Basket twill weaves.

D. C. Snowden. *Wool Rev. 27:* 35-36 (September, 1955).

Serviceability of shirts made from cotton of two varieties, regions and seasons of growth.

M. A. Grimes and C. A. Werman. College Station, Texas: Texas Agricultural Experiment Station, April, 1955. 22 p. Bulletin 804.

This study was undertaken to add to the present knowledge of the effect of varietal, regional, seasonal differences and method of harvesting on the wearing quality of men's white broadcloth shirts. The life of the cotton was traced from the seed through the growth of the fiber, the manufacture of the yarn and fabric and through the life of the shirts. 3 references.

Mathematical relationships between yarn and fabric.

K. Petzoldt. *Textil- u. Faserstofftech. 5, No. 5:* 303-309 (1955); *in German.* Through *BCIRA 35:* 575 (1955).

An attempt is made to find, on a mathematical basis, relationships between yarn and fabric, and to calculate from the fabric density the structure of the fabric. The values found by the simple calculation procedure, demonstrated by examples, make it possible to draw conclusions as regards the behavior of the fabric on the loom, particularly in the case of mixture fabrics from synthetic fibers.

Thermal insulation of single and multiple layers of fabrics.

M. A. Morris (University of Minnesota). *Textile Research J. 25:* 766-773 (September, 1955).

Thermal insulation, thickness, and volume of air per unit area of fabric have been determined for single and multiple layers of fabrics. A comparison of the thermal insulation and thickness values obtained by the actual measurement of multiple layers of fabrics to those obtained by adding the values of the individual fabrics involved has been made. In addition, thermal insulation data for the single and multiple layers of

fabrics were plotted against the values for the other properties to show the relationships that exist. 8 references.

Wet-cold. Part 1. Effect of moisture on transfer of heat through insulating materials.

A. H. Woodcock and T. E. Dee, Jr. U. S. Climatic Research Laboratory, Lawrence, Massachusetts. December, 1954. 24 p. Available from U. S. Office of Technical Services, Washington 25, D. C. 75 cents. PB 111 639.

Using the basic principles of moisture diffusion and heat transfer, relations between rate of drying, rate of heat transfer, drying time and location of moisture have been derived. Representative computations have been made for completely wicking and completely non-wicking insulating materials. Textile materials with widely different wicking properties were then selected for study. The time course of heat transfer through each of these fabrics after wetting was then determined using a flat plate heated to 92° F. in a constant temperature room at 30°F. and a relative humidity of 75% ± 5%.

FINISHING AND CHEMICAL PROCESSING D

The stabilization of structures made from Terylene polyester fibers.

D. N. Marvin and P. W. Carlene (Imperial Chemical Industries Ltd). *Textile Merc. 133:* 497-502 (September 16, 1955).

The aspects covered range from the twist setting of yarns to the heat setting of fabrics and twisted structures used in the apparel and industrial applications of the fiber. The effect of such stabilization processes on fiber structure and fiber properties is considered in relation to end use requirements.

CHEMICAL PROCESSES D 1

Sodium chlorite bleaching.

W. Hundt. *Skinner's Silk and Rayon Record 29:* 999-1000 (September, 1955).

The Degussa continuous chlorite bleaching system (German) and the Svetema pad-roll open-width bleaching machine (Swedish) are described.

The role of cotton wax in bleaching. New process for the production of hydrophilic fabric.

H. Baier. *Textil-Praxis 10, No. 5:* 480-482 (1955); *in German.* Through *BCIRA 35:* 565 (1955).

The method described consists in bleaching cotton, without pre-boiling, by means of chlorite and subsequently treating it with weak alkali solutions at temperatures over 70°C. The hydrophilic effect obtained is due to a large decrease in the cotton wax content during the alkaline after-treatment; the wax content does not decrease appreciably during chlorite bleaching and, in order to obtain the same effect with solutions of about 8-10 g/l. NaOH (in kier-bleaching), it is necessary to boil the material for 6-8 hours at 2½-3 atm. prior to chlorite treatment. The hydrophilic effect obtained in the new process may be due to the fact that the strongly oxidizing action of chlorite causes degradation of the cotton wax constituents to smaller, alkali-soluble fractions.

Optical bleaching—white magic.

S. N. Glarum (Ciba Co., Inc.). *Am. Dyestuff Reptr. 44:* P625-P630 (August 29, 1955).

The way in which optical bleaching agents produce whitening effects and the advantages over bluing agents are illustrated. The versatility of the optical bleaching agents for use on textiles is discussed, as well as the factors that must be considered in selecting the best product for a particular job. 3 references.

The effect of bleaching on nylon fibers. (Uber den Einfluss des Bleichens auf die Nylonfaser)

H. S. Sharaf. Verlag Leemann, Zurich. 60 p. *In German.* Through *BCIRA 35:* 565 (1955).

The theoretical part, in which the author discusses the viscosity theory, molecular weight of high polymeric substances, and the use of viscometric methods for calculating the molecular weight, is followed by a general part on the chemical and physical properties of nylon, molecular-weight determination of polyamides from viscosity data in various solvents and from terminal-group determination, and bleaching of nylon with sodium chlorite and hydrogen peroxide. Bleaching experiments, in which the fiber damage was examined by measuring viscosity and tensile strength and by end-group titration, are described. 47 references.

Bleaching jute with hydrogen peroxide.

H. Chatterjee and K. B. Pal (Indian Central Jute Comm.). *J. Soc. Dyers Colourists 71:* 525-530 (September, 1955).

A single-bath process of bleaching jute with hydrogen peroxide is described with particular reference to loss of weight, lignin, and breaking strength as well as the color of the bleached material and the composition of the residual lignin.

The influence of variables—e.g. reaction temperature, time, bleach concentration, liquor ratio, pH, bleachability with peroxide compared with chlorite—has been studied. 26 references.

PVC leather cloth.

M. S. Welling (British Geon Ltd.). *Texture 2:* 116-122 (September, 1955).

The manufacture and applications of polyvinyl chloride coated leather cloth.

Faults in crease-resistant finishes.

W. Scharroba. *Textil-Praxis 10, No. 6:* 589-591 (1955); *in German.* Through *BCIRA 35:* 602 (1955).

The crease-proofing process with urea-formaldehyde precondensates is briefly outlined and sources of faults are pointed out. The impregnating bath should be perfectly clear; cloudy solutions or solutions that have been stored too long must be discarded. The fabric must be perfectly clean and free from size residues or other preparations. A certain time must be allowed for the penetration of the liquor into the fabric, and attention must be paid to the uniform squeezing effect of the padding rollers. The problem of slow or rapid drying, and after-treatment of the fabric (washing in weakly alkaline detergent solution) are discussed, with reference to the development of fishy odor.

How Europe's dyers handle spun rayons. Part 2.

D. Fornelli. *Modern Textiles Mag. 36:* 71-72 (September, 1955).

European techniques for dyeing and finishing fabrics woven of spun rayon yarns.

Tips on using polyvinyl acetate.

L. B. Arnold, Jr. (Vikon Chemical Co.). *Textile World 105:* 144, 149 (September, 1955).

Polyvinyl acetate is a comparatively recent finishing reagent that is finding increased use in plain- and resin-finishing formulas. Some of its good and bad points are brought out in question-and-answer form.

Wet processing fabrics containing Metlon-Mylar yarn.

Textile Ind. 119: 120-121 (October, 1955).

A table of wet processing procedures for Metlon-Mylar yarns with cotton, nylon, wool, or viscose is presented.

Distribution of phosphorus during processing and charring of THPC-resin-treated cotton fabric.

M. F. Stansbury and C. L. Hoffpauir (Southern Regional Research Lab.). *Am. Dyestuff Reptr. 44:* 645-647, 676 (September 12, 1955).

A large percentage of the total phosphorus present in the THPC-treated and phosphorylated fabric remained in the fabrics after charring. Most of the phosphorus which volatilized was in the form of easily condensable phosphorus compounds. A small amount of phosphine (0.0019% based on fabric weight) was evolved when THPC-treated fabric was charred under the experimental conditions employed, whereas little or none was evolved from phosphorylated fabric. 9 references.

Effect of sodium hydroxide solutions on cellulose fibers. Fixation equilibrium of sodium hydroxide. Mercerization.

J. Chedin and A. Marsaudon. *Makromol. Chem. 15, Nos. 2 and 3:* 115-160 (1955); *in French.* Through *BCIRA 35:* 568 (1955).

Fixation of sodium hydroxide on cellulose was studied by means of a chemical method and the amount of bound sodium hydroxide and its hydration were also determined as a function of concentration. A theory is advanced, which is based on the assumption that one cellulose OH-group (per C_6) replaces one molecule of water in one molecule of the sodium hydroxide, thus shifting the hyration equilibria of the caustic soda in aqueous solution. The accessibility of native fibers depends upon the sodium hydroxide concentration, whereas previously-mercerized fibers seem to be accessible at all concentrations. On the whole, the phenomena are similar to those encountered during the interaction between fibers and aqueous nitric acid solutions. Mercerization of cellulose is defined as a particular case of interaction between polar high polymers and their solvents and plasticizers. 22 references.

Impregnation of bleached jute yarns with synthetic resins. Part 1. Effect of different resins on wet-strength and water absorption.

R. P. Chatterjee, A. Ghose, and J. K. Chowdhury (Bose Inst. Calcutta). *J. Indian Chem. Soc., Ind. and News Ed. 17:* 155-163 (1954). Summary in *Chem. Abstracts 49:* 12838 (September 25, 1955).

The rotproofing and weathering properties of some compounds of dehydroabietylamine.

G. R. F. Rose and C. H. Bayley (National Research Laboratories). *Am. Dyestuff Reptr. 44:* 648-651, 676 (September 12, 1955).

A study was made of the permanence to outdoor weathering of (a) copper and zinc complexes of dehydroabietylamine in association with 2-ethyl hexoic acid and 8-hydroxyquinoline and

(b) dehydroabietylammonium pentachlorophenoxide, applied to unbleached cotton duck. The tendency of the compounds to enhance or suppress actinic degradation, as measured by loss in breaking strength and by increase in cuprammonium fluidity, was determined. The fungicidal efficacies of the compounds as measured by the soil-burial procedure were investigated. Comparison was made with the behavior, under similar conditions, of fabric treated with copper naphthenate and copper 8-hydroxyquinolinolate. 8 references.

Shrink resistant wool: a review of progress to date. Part 1.

R. W. Moncrieff. *Texture 2:* 108-111 (September, 1955).

A general survey. 10 references.

Dimensional stabilization of textile fabrics.

N. A. Matlin and A. C. Nuessle (Rohm and Haas Co.). *Ind. Eng. Chem. 47:* 1729-1739 (September, 1955).

Dimensional stability—the dual resistance of fabrics to the tendency to shrink and stretch—is of extreme importance in fabrics used for the manufacture of clothing. Chemical processes extend the range of fiber and fabric types that can be stabilized. The mechanics of shrinkage vary with the type of shrinkage and of fiber. Cotton and rayon shrink because of fiber swelling, wool because of felting, and the hydrophobic synthetics because of thermal disorganization and mechanical distortion. All shrink when strains developed in manufacturing are released. Treatment of rayon and cotton with cellulose reactants and thermosetting resins, especially urea- and melamine-formaldehyde resins, has been effective, and various classes of feltproofing systems are used with wool. The chemical reaction between keratin and an acrylic resin is not needed for the production of a durable finish. 60 references.

DYEING AND PRINTING D 2

The applications of Neutrogene dyes and their limitations.

M. Binder. *Teintex 20, No. 4:* 255-270 (1955); *in French.* Through *BCIRA 35:* 493 (1955).

The dyes, which form part of the Rapidogene dye group, are characterized by their stability in alkaline medium and at normal temperature and their relative sensitivity to reducing agents. The use of special stabilizing compounds makes it possible to develop the dyes by means of acid or neutral vaporization. The possibilities for the application of these dyes, especially in direct printing, are discussed. Their range does not include bright blues or greens.

Measurement of the redox potential of vat dyes.

H. Borsten and F. L. J. van Lamoen. *Tex 14, No. 4:* 467-473 (1955); *in Dutch.* Through *BCIRA 35:* 530 (1955).

Redox potential measurements and their application in dyeing and printing are briefly reviewed, comparative determinations of the leuco potentials of various commercial products are described, and the effects of lye and hydrosulfite concentration on the potential of the lye-hydrosulfite solution and of various electrode materials are discussed. Reference is also made to the use of various redox indicator papers for determining the reducing power of the dye bath.

The development of Anthrasol dyes.

K. Dellian. *Z. ges. Textil-Ind. 57, No. 11:* 646-655 (1955); *in German.* Through *BCIRA 35:* 527 (1955).

Development, properties and uses of Anthrasol dyes are reviewed and German, British, French, American, and Swiss patents on Anthrasol dyes are given in chronological order. 14 references.

New developments in naphthol dyeing and printing.

M. Huckel. *Z. ges. Textil-Ind. 57, No. 11:* 633-638 (1955); *in German. Through BCIRA 45:* 527 (1955).

After a brief historical review of the development of azo dyes since 1880, the author discusses new Naphthol AS products, and recently developed dyeing and printing methods for vegetable, synthetic, and animal fibers.

Developments in high temperature dyeing.

E. Vogel. *Textil-Rundschau 10, No. 4:* 175-178 (1955); *in German.* Through *BCIRA 35:* 528 (1955).

The equipment necessary for high-temperature dyeing and the advantages of the process are discussed, with reference to dyeing of cellulose fibers and wool. A list of Chlorantin dyes is given.

Buffering of the developing baths in Naphthol AS dyeing.

P. H. Gross. *Textil-Praxis 10, No. 5:* 486-489 (1955); *in German.* Through *BCIRA 35:* 566 (1955).

The role of various buffer systems in Naphthol AS dyeing is shown by means of simple curves from which practical conclusions can be drawn. Special reference is made to results obtained with

sodium bicarbonate, sodium acetate, sodium acetate-acetic acid and disodium phosphate as buffers.

Colorimetric methods applied to dyeing and printing problems.

P. Mougeot and J.-P. Niederhauser. *Industrie Textile:* 384-388 (May, 1955); *in French.* Through *BCIRA 35:* 567 (1955).

The main applications of colorimetry in the textile industry and dyeing are reviewed, with special reference to the representation of colors in the trichromatic diagram.

Developments in the use of salt in the textile-dyeing industry.

W. W. Harris, Jr. (International Salt Co., Inc.). *Am. Dyestuff Reptr. 44:* P619-P624 (August 29, 1955).

The latest developments in salt-brine purification, methods of dissolving and storing salt, and new textile-dyeing reagents are discussed. 2 references.

Coloring cotton for wool blends. Part 1.

Dyer 114: 339-341 (September 2, 1955).

Machinery for dyeing cotton loose and in the form of hanks and application of direct dyes are discussed.

Courpleta—the dyeing and other properties of cellulose triacetate yarn and staple.

J. Boulton (Courtaulds, Ltd.). *J. Soc. Dyers Colourists 71:* 451-464 (August, 1955).

The manufacture of Courpleta is briefly described, and a short historical review given of the development of cellulose triacetate fibers. Detailed physical and chemical properties of the fiber are enumerated. The techniques of dyeing so far developed are discussed in detail, and a description is given of durable pleating effects. Tables of uses and color fastnesses are provided. 15 references.

Recent developments in the dyeing of Dacron polyester fiber and nylon.

H. P. Landerl (E. I. du Pont de Nemours and Co., Inc.). *Am. Dyestuff Reptr. 44:* P662-P666 (September 12, 1955).

To aid in developing methods for dyeing the synthetic fibers, it has been necessary to develop new equipment for the laboratory. Examples of some of this equipment are described and illustrated. A large amount of Dacron is dyed with the aid of carriers. The author presents a general review of carriers along with a more detailed discussion of the most commonly used carrier, o-phenylphenol. A procedure for dyeing spun nylon carpeting with maximum penetration and levelness and with excellent fastness is accomplished by applying Capracyl dyes and other neutral dyeing dyes with Capracyl Leveling Salt, which is a leveling and transfer agent. 9 references.

The guilds of the city of London with special reference to the Worshipful Company of Dyers.

P. E. Jones. *J. Soc. Dyers Colourists 71:* 496-501 (September, 1955).

The history of the City guilds is outlined from medieval times until the present day. The craft of Dyers was mentioned in 1298, but the Dyers' Company was not incorporated until 1471, and reincorporated in 1472. Its subsequent history is traced.

Processing of synthetic yarns with the newer formulations.

A. P. Roy (Emkay Chemical Co.). *Knitter 19:* 49-53 (September, 1955); *Textile Bull. 81:* 84-87 (September, 1955).

Dyeing procedures and dyes for nylon, Orlon and Dacron.

The dyeing of Orlon type-42 acrylic fiber with cationic dyes.

R. A. Clarke and L. Bidgood, Jr. (E. I. du Pont de Nemours and Co., Inc.). *Am. Dyestuff Reptr. 44:* P631-P635, P640 (August 29, 1955).

The application of cationic dyes to Orlon type-42 acrylic fiber is discussed with particular reference to the new Sevron dyes, which give a full range of suiting shades with light fastness adequate for men's wear. The use of Du Pont Retarder LAN textile-processing agent, as well as a new retarding agent (Du Pont Retarder DS) for obtaining dye levelness, and the effect of temperature on dyeing rate are indicated. Promising techniques for the partial stripping and leveling of cationic dyes on 100% Orlon, as well as blends of Orlon with wool or the cellulosic fibers, are introduced. Finally, procedures are presented for the simultaneous dyeing of blends of Orlon and .wool. 6 references.

Developments in dyeing of rayon and staple fiber fabrics.

M. Peter. *Textil-Praxis 10, No. 6:* 583-586 (1955); *in German.* Through *BCIRA 35:* 600 (1955).

The tension-less boiling machine constructed by Mezzera (Milan), modern tension-less dye-jigs, and a pad-roller installation are described and their advantages pointed out. Suitable concentrations of a series of Chlorantin Fast dyes are listed.

Dyeing and finishing rayon tufted carpets.

J. A. Woodruff (American Viscose Corp.). *Am. Dyestuff Reptr. 44:* P636-P640 (August 29, 1955).

The author discusses the problems of attaining levelness in dyeing and especially the avoidance of streaks and side-to-center unevenness. Three procedures for dyeing are suggested, as well as improvements in pumping and machine arrangements. A list of dyes that minimize streaks is offered. The avoidance of color migration in drying and the formation of discoloration products from the backing of the carpeting are touched upon.

Some observations on the dyeing of wool at high temperatures.

G. A. Coutie, D. R. Lemin, and H. Sagar (Imperial Chemical Industries). *J. Soc. Dyers Colourists 71:* 433-443 (August, 1955).

It has been shown that dyeing temperatures above 100°C. can result in the decomposition of a number of wool dyes, primarily as a result of reduction. The full wet fastness properties of wool dyes can be obtained in short times at elevated temperatures. Quantitative tests indicate marked increases in the rate of redistribution of dye at elevated temperatures. Tests on the physical properties of worsted yarns show that excessive degradation of the wool fiber occurs at temperatures above the boil if strongly acid or neutral dyebaths are employed. It has been shown that wet tenacity is a much more sensitive criterion of fiber degradation than dry tenacity. Conditions of time, temperature, and pH are suggested which will yield satisfactory dyeings at elevated temperatures without producing undue fiber degradation. 12 references.

New dyeing machine has automatic color control.

R. W. Pinault. *Textile World 105:* 140-141, 198, 202 (September, 1955).

A hosiery-dyeing machine, Electrocolorset, is described that scours, dyes, and finishes full-fashioned hose in one run. Once adjusted to a particular shade, it will reproduce it indefinitely and it can be reset to dye another shade in 4 minutes.

The dyeing of textile fibers above 100° C.

J. A. Fowler (Imperial Chemical Industries). *J. Soc. Dyers Colourists 71:* 443-450 (August, 1955).

The application is described of high-temperature techniques, i.e. above 100°C., in the dyeing of a variety of textile fibers. Particular mention is made of the application of direct and vat dyes to cellulosic fibers, of acid and chrome dyes to wool, and of disperse and azoic dyes to Terylene polyester fiber. Reference is also made to the machinery available and the advantages to be gained by the use of high-temperature techniques. 22 references.

Pad steam dyeing speeds up output.

Imperial Chemical Industries Ltd. *Textile Wkly. 56:* 726-728 (September 2, 1955).

How to achieve the best results.

An explanation of dyeing mechanisms in terms of non-polar bonding.

A. N. Derbyshire and R. H. Peters (Imperial Chemical Industries Ltd.). *J. Soc. Dyers Colourists 71:* 530-536 (September, 1955).

Inadequacies are demonstrated in previous attempts to explain dyeing mechanisms on the assumption of polar forces between dye and fiber. The important part played by non-polar forces in adsorption phenomena generally is illustrated by examples. It is postulated that such forces are mainly responsible for dye-fiber attachment and that in aqueous solution they occur between hydrophobic surfaces. 22 references.

Flock printing of textiles.

W. Pistorius. *Z. ges. Textil-Ind. 57, No. 12:* 777-780 (1955); *in German.* Through *BCIRA 35:* 568 (1955).

The flock printing method is based on the use of suitable binding agents. The properties of solvent- and dispersion-binders and their advantages and disadvantages are discussed, with reference to the adhesive power of short fibers in the dry and wet state, resistance of the binders to washing, incorporation of resins, etc.

Combined flock and screen printing equipment.

Skinner's Silk and Rayon Record 29: 962-963 (September, 1955); *Dyer 114:* 375, 377 (September 2, 1955).

The Swiss Text-O-Stat combined flock and screen printing machine is described and illustrated.

The printing and padding of polyacrylonitrile fibers by the Sandocryl printing method.

W. Flugel, A. Durst and E. Metzger. *Textil-Rundschau 10, No. 4:* 172-175 (1955); *in German.* Summary in *BCIRA 35:* 531 (1955).

Printing the new synthetic fibers.

F. Kress. *SVF Fachorgan Textilveredlung 10, No. 5:* 234-241 (1955); *in German.* Through

BCIRA 35: 531 (1955).

Directions are given for printing polyamide, polyacrylonitrile, polyester and polyvinyl chloride fibers, and various dye groups and their use in printing pastes are described. Reference is made particularly to direct and discharge printing and to the production of special print effects on Perlon and nylon fabrics.

The role of thickening agents in vat printing.

W. Julicher. *Melliand Textilber. 36, No. 5:* 477-483 (1955); *in German.* Through *BCIRA* 531 (1955).

The properties required for satisfactory thickening agents are reviewed, with particular reference to the Colloresin and Alkaprint processes. In the latter, the locust bean flour, used as thickener in the Colloresin process, is employed in its etherified form to make it less sensitive to alkali, and only the printed parts need be treated with potash (in the Colloresin process the whole fabric must be impregnated).

MECHANICAL PROCESSES D 3

Measurement of the pressure distribution between rollers in contact.

G. J. Parish. *Brit. J. Appl. Phys. 6, No. 7:* 256-261 (1955). Through *BCIRA 35:* 602 (1955).

Apparatus is described for measuring the pressure in the nip between calender bowls (or other rollers with no fixed gap between them). A radial pressure pin mounted in one of the rollers transmits the load on its outer end to a pressure-sensitive device situated within the roller. This device is a glass block through which polarized light is passed. Load variations cause variations in the intensity of the transmitted light and the latter are detected by a photoelectric cell whose signals are amplified and passed to a cathode ray tube.

Quick calculations for ventilating singeing machines.

W. O'Keefe. *Textile Ind. 119:* 131-132 (October, 1955).

Design of ventilation systems for singeing equipment and other mill machines is usually a problem for each mill to solve according to individual requirements. Many mill engineers do their own computations for duct-work. This article may serve as a guide for calculating the requirements quickly and with reasonable accuracy.

DRYING D 4

Drying methods and equipment. Part 1.

W. C. Lapple and W. E. Clark (Midwest Research Institute). *Chem. Eng. 62:* 191-210 (October, 1955).

Nearly every solids process needs drying, but the dryer user must be able to answer many complex questions before he can make a technically and economically correct choice. Providing the bases for such choices was the reason for this report. Basic theory, types, principles and comparative advantages of dryers are included, along with methods for dryer sizing and cost estimating. 10 references.

The Fleissner card sliver dryer.

Rayonne et Fibres Synthet. 11, No. 5: 747-749 (1955); *in French.* Through *BCIRA 35:* 569 (1955).

Treatment of plastic materials by infra-red radiation.

M. Deribere. *Chim. et Industr. 73, No. 5:* 913-918 (1955); *in French.* Through *BCIRA 35:* 569 (1955).

A description is given of the infra-red tunnel-oven (developed by the Etablissements S. E. P. S.), which can be used for the gelification of polyvinyl chloride films on fabrics, polymerization of synthetic resin impregnations on dry fabrics, drying and simultaneous polymerization of resins on wet fabrics, and drying alone. Special reference is made in this article to the device for the gelification of polyvinyl chloride.

TESTING AND MEASUREMENT E

FIBERS E 1

Differentiation of jute and other vegetable fibers by acetyl content.

T. H. Soutar and M. Bryden (British Jute Trade Research Association). *J. Textile Inst. 46:* T521-T528 (August, 1955).

Chemical analyses reported for jute, flax, sisal, and other bast and leaf fibers over a long period indicate that the composition of the fiber derived from any particular species of fiber-bearing plant is relatively constant and is unaffected by geographical and agricultural influences. The acetyl contents of various bast and leaf fibers, as determined by hydrolysis, show a close relationship with hemicellulose contents and offer a suitable

basis for the differentiation of fiber types. The method can be used to differentiate between jute and *Hibiscus* fibers and even between *capsularis* and *olitorius* jute fibers. The method and the results obtained are presented and discussed.

Microscopical identification of polyester fibers.

H. Buhler and H. Zahn. *Melliand Textilber. 36, No. 6:* 542 (1955); *in German.* Through *BCIRA 35:* 571 (1955).

The method described for staining polyester fibers with Sudan-Phenol-Red (0.5g Sudan Red 7B and 20 c.c. 80 per cent phenol solution) makes it possible to identify the fibers microscopically within several minutes and to distinguish them from polyacrylonitrile, polyamide, polyvinyl chloride, regenerated cellulose and regenerated protein fibers.

YARNS E 2

The use of the Zinser calculating disc in the plant, with reference to the spinning value of various cottons.

K. Blaschke. *Melliand Textilber. 36, No. 6:* 612-615 (1955); *in German.* Through *BCIRA 35:* 561 (1955).

The Zinser calculating disc makes it possible to convert any yarn count system into another without calculation by direct reading of the scales arranged above each other. In addition, other conversions (e.g. inch to mm and vice versa) and divisions and multiplication can be carried out with the accuracy of a slide rule. In practical use, the disc can be used for calculating the velocity of the traveler in m/sec from the ring diameter (in inch or mm) and spindle rotation/min or, if desired, the required spindle velocity/min from the known ring diameter and traveler velocity.

A new continuous regularimeter for studying the apparent diameter of a yarn. Some examples of application in relation to various yarn parameters and the appearance of the resulting fabric.

F. Maillard, O. Roehrich and E. Amouroux. *Bull. Inst. Textile France No. 52:* 7-16 (April, 1955); *in French.* Through *BCIRA 35:* 574 (1955).

The apparatus described for measuring the apparent yarn diameter in a continuous manner consists of a microscope, an electronic system (amplifier, recorder and integrator) and a mechanical system regulating the speed of the yarn (10 cm-2 m per minute). Results are tabulated for yarns that have been found more or less satisfactory during weaving and which have been also examined, for comparison, on the Uster and Montfort testers.

Regularity testing on the running thread by means of the original Viviani apparatus.

G. Lindner and M. Lorenz. *Textil- u. Faserstofftech. 5, No. 5:* 282-286 (1955); *in German.* Through *BCIRA 35:* 573 (1955).

The apparatus is described and experimental results are reported which show several difficulties and disadvantages of the testing device. Since the curves are recorded on photographic paper, the whole apparatus must be placed in a darkened room where prolonged working in the presence of (even slight) mercury vapors is tiring and has a detrimental effect on health, and the lack of conditioning adversely affects the material tested. The curve only becomes visible after the paper has been developed and fixed (direct photographic paper is too expensive), and the testing length is limited to the length of the paper so that, in the case of irregularities recurring periodically at long intervals, two or three papers must be put on successively. In order to eliminate these disadvantages, an apparatus was developed which works under completely changed technological conditions.

The electronic dynamometer and one of its specified applied uses. Part 1.

J. K. van Wijngaarden. *Enka Breda Rayon Rev. 9:* 140-144 (August, 1955).

Dynamometers for textile testing are described and discussed, with emphasis on the stress-measuring element. 14 references.

Fatigue tester.

A. Laborde. *Industrie Textile:* 253-258 (April, 1955); *in French.* Through *BCIRA 35:* 573 (1955).

The apparatus makes it possible to subject, in a single operation, each of the seven samples (500 mm long = 3.5 m of the yarn) to 130 stretching cycles per minute, i. e. the same number of tensile stresses to which each warp-yarn unit was found to be subjected successively on the loom during weaving. In this article, the author discusses the behavior of textile fibers to repeated tensile stresses and enumerates briefly four different methods of elastic fatigue testing.

Method of examining yarn-processing machines.

W. Frenzel and H. Hesse. *Faserforsch. u. Textiltech. 6, No. 5:* 189-198 (1955); *in*

German. Through *BCIRA 35:* 573 (1955).

In order to determine the stresses to which the yarn is subjected during processing, a test thread was prepared which gives, in the unprocessed state, a linear curve at constant elongation in the yarn-testing machine. After processing in the machine to be tested, the test thread is reexamined, its diagram showing the stresses exerted by the machine tested and indicating possibilities for improvement.

FABRICS E 3

Abrasion tests for textiles.

H. Sulser. *Textil-Rundschau 9:* 569-581 (November, 1954); *in German.* English extract in *Dyer 114:* 349-352 (September 2, 1955). See *TTD 11:* 26 (January, 1954).

The comparability of abrasion test results.

O. Schickhardt. *Textil-Praxis 10, No. 5:* 456-458 (1955); *in German.* Through *BCIRA 35:* 575 (1955).

Comparison of the results obtained with the CSI Stoll Quartermaster Universal Wear Tester and the Frank-Hauser abrasion tester (similar in construction, sample tensioning and load) showed considerable differences in the abrasion of the samples, indicating the necessity of using only few suitable testing devices and standardizing the testing and evaluation methods in order to obtain simple and comparable quality values.

Wear properties of resin-finished rayon staple fabrics—a new method of laboratory assessment.

L. F. H. Breens and T. H. Morton (Courtaulds Ltd.). *J. Soc. Dyers Colourists 71:* 513-524 (September, 1955).

An analysis of the problem of the prediction of premature breakdown of crease-resist-finished pure and blended rayon staple fabrics in heavy-duty wear shows that current methods of laboratory assessment, based on flat abrasion motions, are inadequate. A new type of testing machine, the BFT Mark 3, determines resistance to flexing and to ball penetration; from these two machine factors a duty factor is derived which correlates very well with resistance to premature wear in a series of about sixty fabrics whose wear is known with certainty. Three different mechanisms of abrasive breakdown of woven fabric are distinguished and related to measurable machine factors; two only of these, ball penetration and flex abrasion, are components of the duty factor. 9 references.

Correlation of laboratory tests with fabric performance. Part 1. Stiffness, puckering and wear of overcoat fabrics.

J. J. Press (U. S. Navy Bureau of Supplies and Accounts). *Textile Research J. 25:* 812-816 (September, 1955).

A basis is developed for predicting functional use characteristics of overcoat fabrics in the laboratory without going through costly, time-consuming field tests. The correlation obtained, with a representative range of fabrics, between laboratory tests and fabric performance is reviewed. The results are analyzed for significance. 7 references.

Examination of surface-finished textiles.

W. Rotta and G. Scheurich. *Textil-Praxis 10, No. 6:* 586-589 (1955); *in German.* Through *BCIRA 35:* 606 (1955).

Reference is made to the American microscopical technique for examining the surface structure of fabrics (R. Krammes and C. Maresh. *Am. Dyestuff Reptr. 43:* 189-191 (July, 1954)), pointing out that for the textile laboratory, the method is too complicated. The authors used, therefore, for the cellulose film, a simple staining method with Sirius Light Scarlet GG dissolved in glycerine and show photomicrographs to prove that the results are equivalent to those obtained from the aluminum-shadowed vacuum-prepared cellulose film. A brief description is also given of an experimental apparatus for carrying out the American method.

Study of fabric surfaces. A contribution to non-destructive textile testing.

H. Reumuth. *Z. ges. Textil-Ind. 57, No. 12:* 763-768 (1955); *Melliand Textilber. 36, No. 6:* 533-539 (1955); *in German.* Through *BCIRA 35:* 574 (1955).

The ROX impression method (developed by the author) and its modifications are reviewed, and its application as a negative impression method for testing the surface of textiles during production, without removing them from the machine, for metallic deposits (Fe, Mn, Ca, etc.), dirt, residues of fat, oils and waxes, moths and other pest particles, blood, serum, etc., is described. The negative is made by using at present the commercially available adhesive UHU; for the initially developed method, the negative material ROX I has been used. Photomicrographs are shown. 16 references.

Testing of textiles. Determination of the thickness of textile structures and values derived therefrom (compressibility, weight per volume, and pore proportion).

German Standards Committee. *Textil-Praxis 10, No. 6:* 547-549 (1955); *in German.* Through *BCIRA 35:* 606 (1955).

The draft specification DIN 53 855 for thickness measurements on fabrics, knitted goods, etc. (for the purpose of determining their thickness at a certain pressure and calculating compressibility, weight per unit volume and pore proportion) comprises definitions of thickness, standard thickness (at a pressure of 1 g/sq. cm), absolute and relative compressibility, weight per volume, pore proportion and equivalent thickness of the air layer. It also specifies the manner of sampling and sample preparation, the testing apparatus and its control, the method and evaluation of the results, and the items to be included in the test report.

Use of the Schlieren technique to observe the still air layer above the surface of fabric covering a heated flat plate.

C. J. Monego (U. S. Quartermaster Research and Development Command). *Textile Research J. 25:* 763-766 (September, 1955); *ASTM Bull. No. 208:* 33-35 (September, 1955).

The insulating properties of fabrics have often been associated with "still" air layers which exist over the surface of the fabric and add to its insulating value. Measurements of this air layer were made in the past by indirect methods. To date the examination of the "still" air has been difficult since techniques for making this air visible have not been explored by investigators studying the thermal properties of fabrics. The Schlieren technique, whereby differences of air density can be made visible, suggests the possibilities of photographing the air layer so that it can be accurately measured and its behavior observed in different environmental conditions. This paper describes the preliminary experiment to demonstrate the feasibility of the application of the Schlieren technique. 7 references.

The measurement of fabric regularity.

A. Barella. *Rev. Textile 54, No. 4:* 152-155 (1955); *in French.* Through *BCIRA 35:* 606 (1955).

Two procedures developed by Benko and Monfort and two methods by the author himself are described and the present state of research on fabric regularity and the relationship between yarn and fabric regularity are reviewed.

OTHER E 4

Technical temperature measurement. Part 1. Dynamic errors in temperature measurement.

C. G. Booy. *Enka Breda Rayon Rev. 9:* 134-139 (August, 1955).

The object of part 1 of this series of articles is to draw attention to the numerous errors liable to be made in temperature registrations for plant control. The dynamic errors are illustrated by diagrams and some of the possible consequences are mentioned.

INDUSTRIAL ENGINEERING F

Air-conditioning.

C. L. Hilton. *J. Textile Inst. 46:* P470-P490 (August, 1955).

Information is given on the specification and design of plant, instrumentation, methods of control and operational experience. Steps taken to overcome specific operational difficulties are described. A description of a smaller unit, equipped with refrigeration plant, for the accurate control of air conditions in a research laboratory, is also given.

How you can avoid losses through adoption and use of proper cost methods.

T. R. Hosick (Wilson, Hosick and Co.). *Knitter 19:* 41-43 (September, 1955).

Hosiery mills are showing an interest in cost accounting as a means toward closer cost control. This paper, presented at the annual meeting of the Southern Hosiery Manufacturers Association, discusses some important aspects involved in operating a successful cost system.

Standard work load determination under conditions of varying production demands.

E. Wilde. *Time and Motion Study 4, No. 5:* 27-31, 51-52 (1955). Through *BCIRA 35:* 585 (1955).

Work studies carried out in the pirn winding section of a weaving mill in Israel are reported. The pirn winders supplied weft for 64 looms weaving anything up to 25 different kinds of cloth at one and the same time. The procedure used was based on the Ashcroft method of determining machine interference.

MACHINERY AND MAINTENANCE F 1

Application of electrical equipment to textile machinery. Part 3. Variable speed drives.

F. W. Cox. *Texture 2:* 112-115 (September, 1955).

Floors and trolley wheels in the textile industry.

J. H. Zwart. *Enka Breda Rayon Rev. 9:* 149-160 (August, 1955).

A detailed study is described of floor types and wheel types and the abrasive action of traffic on the floors. Diagrams, photographs, tables.

How to get longer life from your rolls.

D. Kuniholm (Rodney Hunt Machine Co.). *Textile Age 19:* 38-42 (October, 1955).

Directions for taking care of stainless steel, rubber, and chromium plated rolls.

Problems of textile sampling.

Textile Wkly. 56: 701-702 (September 2, 1955).

Small scale sampling machines are described which may be used to produce samples commercially. These include a German sample carding engine, the MAB sample draw frame, and a loom especially designed for sample weaving. The draw frame is described and illustrated with diagrams.

WASTE DISPOSAL F 2

Biochemical degradation of synthetic detergents. Part 2. Studies on the relation between chemical structure and biochemical oxidation.

R. H. Bogan and C. N. Sawyer (Massachusetts Institute of Technology). *Sewage and Ind. Wastes 27:* 917-928 (August, 1955).

An investigation was made of the relationship existing between chemical structure and the biochemical oxidation of the major commercial detergent types. Data were obtained for a selected group of molecular types which at the time represented the principal syndets of commerce. In addition, a number of pure organic compounds representing certain common components of detergent molecules were also investigated. The biochemical behavior of these substances was studied under conditions which represented biological sewage treatment and simulated the biological processes of receiving waters. 9 references.

An industrial waste guide to the wool processing industry.

AATCC Stream Pollution Abatement Committee. *Am. Dyestuff Reptr. 44:* P655-P661 (September 12, 1955).

This guide summarizes the sources of pollution in the wool-processing industry, the polluting effects of woolen-mill wastes, and information on the methods of dealing with the waste problems of the industry. 58 references.

QUALITY CONTROL F 3

The basis of full-fashioned hosiery quality is control over knitting irregularity.

J. C. Cobert. *Knitter 19:* 44-46 (September, 1955).

The article points out how a system of control over product irregularity is a basic part of any quality program.

Modern mill controls. Part 7. How to set standards for waste control.

N. L. Enrick. *Modern Textiles Mag. 36:* 87, 91, 106 (September, 1955).

This article develops a complete and detailed example of the establishment of waste standards, opening through weaving, for a typical mill. The procedures can be readily followed by other mills, using the formulas furnished. Comparative data are given for several print cloth mills. The control forms for a routine program are shown.

SCIENCES G

CHEMISTRY G 1

The role of the hydrogen bond in the rheological behavior of cellulose sheets.

A. H. Nissan (Leeds University). *Textile Research J. 25:* 780-788 (September, 1955).

12 references.

Heterogeneous degradation of cellulose. Part 4. Mild hydrolytic degradation of cotton and wood pulp.

T. N. Kleinert and V. Moessmer (Zellwolle Lenzing AG.). *Textile Research J. 25:* 778-779 (September, 1955).

The presence of a wetting agent (Igepon) accelerated only the initial degradation of a raw cotton exposed to 0.1 *N* hydrochloric acid at 20°C in the absence of light for periods of up to 350 days. During this time the dry strength decreased by almost one-half. The dry strength decrease, being slightly greater than the wet strength decrease, resulted in a small relative wet strength increase, from 93% to 110%. Purified cotton linters were degraded more slowly than raw cotton, and an alkaline refined sprucewood pulp more slowly still, even though the wetting agent was present in the latter case. 9 references.

Molecular bonding: modern aid to finishing processes. Part 1.

A. J. Hall. *Fibres 16:* 305-311, 320 (September, 1955).

This article describes in detail what happens in the molecular bonding phenomenon and how it

is utilized to improve fabric properties—in particular with the formaldehyde and urea-melamine-formaldehyde resins, the isocyanates, organo-silicon compounds and halogenated compounds.

Synthetic detergents and emulsifiers—up to date. Part 3.

J. W. McCutcheon. *Soap Chem. Specialties 31:* 52-67 (September, 1955).

Techniques for evaluating low-foaming detergents. Part 2.

M. N. Fineman, H. L. Greenwald and C. G. Gebelein. *Soap Chem. Specialties 31:* 50-52 (September, 1955).

See *TTD 12:* 449 (October, 1955).

The catalytic degradation and oxidation of cellulose.

W. G. Parks, M. Antoni, A. E. Petrarca, and A. R. Pitochelli (Univ. of Rhode Island). *Textile Research J. 25:* 789-796 (September, 1955).

This investigation is a part of a general study on the reaction mechanism of fire-resistance compounds on cellulose. A general theory of the reaction mechanism of fire-resistance compounds emphasizes that an effective compound should direct the thermal decomposition of cellulose toward the nonvolatile products carbon and water. Many investigations reported in the literature have been based on the assumption that the gaseous product resulting from the thermal degradation of fire-resistant treated cellulose was mostly water vapor. This investigation was undertaken to determine whether this assumption was valid. 6 references.

A tracer method for determination of deposition of carbon on cotton.

A. K. Phansalkar and R. D. Vold (Univ. of Southern California). *J. Phys. Chem. 59:* 885-888 (September, 1955).

The determination of the amount of soil on surfaces is of fundamental importance in studies of adhesion and of the stabilizing action of colloidal electrolytes as well as in investigation of the mechanism of detergent action. This paper describes a radioactive tracer technique which was found suitable for direct determination of the amount of carbon adhering to a cotton strip dipped in a suspension of the carbon in solutions of sodium dodecyl sulfate. The method developed has the advantage of adaptability to a variety of soils not determinable by chemical methods without causing any change in such variables as the particle size or surface area of the soil. 13 references.

The iodination of wool.

H. R. Richards and J. B. Speakman (Leeds Univ.). *J. Soc. Dyers Colourists 71:* 537-544 (September, 1955).

This paper deals with the development of a method for the complete and exclusive iodination of the tyrosine side-chains of wool. Two illustrations of its use are included. 16 references.

The mechanism of supercontraction in keratin.

G. M. Jeffrey, J. Sikorski and H. J. Woods (Leeds University). *Textile Research J. 25:* 714-722 (August, 1955).

Examination in the electron microscope of keratin supercontracted by various techniques shows that no important deformation, other than shortening, occurs in the microfibrils. The supercontraction phenomena may depend on interactions between the microfibrils and interfibrillar matrix, each component being contractile under suitable conditions. The possibility that the matrix located between microfibrillar sheets has an orderly globular configuration is suggested. 20 references.

Studies on wool gelatin: isolation of acid peptides from room-temperature extracts.

H. Zahn and J. Meienhofer (University of Heidelberg). *(Letter to the editor). Textile Research J. 25:* 738-739 (August, 1955).

The degree of polymerization and its distribution in cellulose rayons. Part 3. The determination of the intrinsic viscosity of cellulose nitrate from a single measurement of relative viscosity.

W. G. Harland (British Cotton Ind. Research Assoc.). *J. Textile Inst. 46:* T464-T471 (July, 1955).

The degree of polymerization and its distribution in cellulose rayons. Part 4. The effect of non-Newtonian flow on the intrinsic viscosity of cellulose nitrate.

W. G. Harland (British Cotton Ind. Research Assoc.). *J. Textile Inst. 46:* T472-T482 (July, 1955).

The degree of polymerization and its distribution in cellulose rayons. Part 5. Fractionation of nitrated rayons.

W. G. Harland (British Cotton Ind. Research Assoc.). *J. Textile Inst. 46:* T483-T499 (July, 1955).

These papers form part of the program of fundamental research carried out at the Shirley Institute. Parts 1 and 2 appeared in *J. Textile Inst. 45:* T678, T692 (1954). Part 3 gives the results obtained in a study of the relation between

the relative viscosity η and the concentration C of 36 fractionated cellulose trinitrates in *n*-butyl acetate solution. A table has been constructed which permits the intrinsic viscosity of a nitrate to be computed from a single measurement of relative viscosity made at one concentration. 14 references. In part 4, the viscosities of *n*-butyl acetate solutions of a cellulose nitrate fraction of degree of polymerization about 1700 and of a nitrated raw cotton have been measured at several mean heads above and below those operating in a conventional capillary viscometer. Intrinsic viscosities have been calculated. 9 references. Part 5 contains the results of a study of the distribution of the degree of polymerization distribution in four commercial rayons (viscose, Tenasco, Durafil, Bemberg cuprammonium rayon) that exhibit considerable differences in their chemical reactivity and mechanical behavior. 32 references.

PHYSICS G 2

Problems of electrostatic charge and climate during processing of synthetic fibers.

G. Edelmann. *Textil- u. Faserstofftech. 5, No. 4:* 211-217; *No. 5:* 286-288 (1955); *in German.* Through *BCIRA 35:* 558 (1955).

In this review, the author discusses the phenomena of electrostatic charges, their origin, conductivity of textile fibers, methods for measuring electrostatic charges, possibilities for their elimination and uses (in electrostatic flocking and health-underwear). 25 references.

Ways in which textile mills can use electronics.

B. E. King and H. Bamford (T. M. M. (Research) Ltd). *Textile Merc. 133:* 366-368 (August 26, 1955).

A general survey of various aspects of cotton manufacture where electronics is used in testing and machine control.

Small particle X-ray scattering by fibers. Part 2. Radial distribution of microcrystallites.

A. N. J. Heyn (Clemson College). *J. Appl. Phys. 26:* 1113-1120 (September, 1955).

The effect of interparticle interference is quantitatively studied and the method of Fourier synthesis is applied to the experimental data for deriving the radial distribution of particles, in analogy with the procedure used in liquids. 15 references.

Effects of nuclear radiation on the strength of yarns.

E. S. Gilfillan and L. Linden (Warwick Mills). *Textile Research J. 25:* 773-777 (September, 1955).

An attempt was made to improve the strength of yarns by nuclear irradiation. The yarns selected for treatment were 60/2 mercerized cotton, 50/1 spun viscose, 70/34 nylon, and 200/80 Type 81 Orlon. Samples from each lot of yarn were prepared in triplicate: one for "control," one to be exposed to gamma irradiations in the order of about 10,000,000 r (Series A), and the other (Series B) to be given at least 24 hr of neutron irradiation. It was concluded that all of the yarns investigated were injured at the level of radiation used in the experiment, suggesting that if such an improvement is possible, it will be found at lower doses than those used.

MISCELLANY H

Automation in the textile industry.

Am. Textile Reptr. 69: 11-114 (September 15, 1955).

This special issue is devoted to articles on various aspects of automation in the textile industry.

The Brussels show—history's largest textile-equipment exhibition. Part 1.

Textile World 105: 103-111, 159 (September, 1955).

Consumer research in relation to the textile industry.

M. Abrams. *J. Textile Inst. 46:* P561-P575 (August, 1955).

The paper opens with a definition of consumer research as the systematic collection of any information about consumers that will enable the producer to carry out his operations more efficiently. After dealing generally with the uncertainties which face the manufacturer, the author discusses problems specifically related to the textile industry. Methods of carrying out consumer research are discussed in detail, typical examples being quoted.

Centenary of the textile industry of India, 1854-1954.

Indian Textile Journal. Bombay, 1955. 695 p. Through *BCIRA 35:* 586 (1955).

This souvenir volume provides a directory and history of mills in India, a number of review articles, and information about the textile industry, education, and research institutions in different countries of the world.

PATENT CHECKLIST

U. S. Patents may be obtained from the U. S. Patent Office, Washington 25, D. C., for 25 cents per copy. Photostatic copies of foreign patents are available. Charges for these photostats are based on the number of pages in the patent.

FIBERS A

NATURAL FIBERS A 1

Decorticator for recovering bast fibers.

C. R. Short and G. P. Brouillette (to Industrial Laboratory, Inc.). USP 2 719 332, October 4, 1955.

MAN-MADE FIBERS A 2

Device for cutting rayon tow into staple fiber.

Algemene Kunstzijde Unie N. V. (Netherlands). BP 725 977, March 16, 1955. Through *BCIRA 35:* 593 (1955).

Cutting of a tow of filaments into staple fiber.

A. Maurer Soc. Anon. (Switzerland). BP 726 246, March 16, 1955. Through *BCIRA 35:* 593 (1955).

YARN PRODUCTION B

Suction device for catching broken threads and for decreasing dirt deposit on the exposed parts of a yarn working textile machine.

H. Hofstetter (Sulzer Freres, Soc. anon., Switzerland). USP 2 717 484, September 13, 1955.

OPENING, PICKING, FIBER PREPARATION B 1

Method and apparatus for opening, cleaning, and blending lint cotton and the like.

A. L. Smith (to Continental Gin Co.). USP 2 718 671, September 27, 1955.

CARDING AND COMBING B 2

Carding engine feed plate with four faces and edges of different lengths, which, by simple rotation, can be arranged to present the most appropriate edge for the particular staple fiber length.

J. V. Roviro (Spain). BP 726 733, March 23, 1955. Through *BCIRA 35:* 595 (1955).

DRAWING AND ROVING B 3

Catch for arm that carries and weights top rollers in drafting system.

J. Noguera (to Casablancas High Draft Co. Ltd). BP 726 905, March 23, 1955. Through *BCIRA 35:* 595 (1955).

A belt guide cradle assembly for a drafting apparatus.

J. Noguera (to Casablancas High Draft Co. Ltd). USP 2 717 425, September 13, 1955.

Drafting mechanisms for textile fibers.

J. Noguera (to Casablancas High Draft Co. Ltd). USP 2 717 426, September 13, 1955.

Rub apron.

J. J. Twomey (to United States Rubber Co.). USP 2 717 427, September 13, 1955.

Gill drawing machine drive.

R. C. Berker. USP 2 718 158, September 20, 1955.

Bearings of drafting rollers for spinning machines.

C. W. R. Winter (to Morgan Crucible Co. Ltd). USP 2 718 442, September 20, 1955.

Top clearer roll construction.

F. L. Harley, Sr. (to Springs Cotton Mills). USP 2 718 670, September 27, 1955.

Scavenger mechanism for pin drafting machines.

A. E. Buchanan. USP 2 719 333, October 4, 1955.

Scavenger hood for pin drafting machines.

A. E. Buchanan. USP 2 719 334, October 4, 1955.

Vacuum clearer for drawing frames.

A. E. Buchanan and D. R. Green. USP 2 719 335, October 4, 1955.

Coilers for textile fibers.

R. D. Carmichael (to Southern States Equipment Corp.). USP 2 719 338, October 4, 1955.

SPINNING, WINDING, TWISTING B 4

Spindle bearing for textile machines.

Roulements à Billes Miniatures Soc. anon. (Switzerland). BP 726 018, March 16, 1955. Through *BCIRA 35:* 596 (1955).

Device for tensioning the thread as it leaves the hollow stem of a double-twist spindle.

W. Morawek (Germany). BP 726 944, March 23, 1955. Through *BCIRA 35:* 596 (1955).

YARNS B 5

Vulcanized silicone rubber as the core of a wrapped elastic yarn.

Dow Corning Co. Ltd. BP 726 479, March 16, 1955. Through *BCIRA 35:* 599 (1955).

FABRIC PRODUCTION C

Braiding apparatus.

R. H. Swackhamer. USP 2 717 528, September 13, 1955.

Web-winding machine.

R. P. Piperoux and J. N. Birmingham (to Celanese Corp.). USP 2 718 362, September 20, 1955.

Bottom weight carrier for braiding machines.

A. J. Groh. USP 2 718 810, September 27, 1955.

WARPING, SLASHING, YARN PREPARATION C 1

Winding machines for small bobbins.

Soc. Alsacienne de Constructions Mecaniques (France). BP 725 990, March 16, 1955. Through *BCIRA 35:* 597 (1955).

Thread cleaning device.

Zellweger AG Uster (Switzerland). BP 726 294, March 16, 1955. Through *BCIRA 35:* 598 (1955).

Automatic winding machines fitted with thread detector devices.

W. Reiners (Germany). BP 726 437, March 16, 1955. Through *BCIRA 35:* 598 (1955).

Acceleration of the replacement of spent reels by fresh ones in cop winding machines having vertical spindles.

W. Dietz (Germany). BP 726 599, March 23, 1955. Through *BCIRA 35:* 597 (1955).

WEAVING C 2

Safety devices for drives for gripper-shuttle loom machine parts.

Sulzer Freres Soc. anon. BP 725 937, March 16, 1955. Through *BCIRA 35:* 599 (1955).

Warp stop motions for looms.

V. G. Van Colle (to Manchester Metal Works Ltd). BP 726 494, March 16, 1955. Through *BCIRA 35:* 599 (1955).

Adaptation of Verdol Jacquard mechanism to high-speed looms.

Societe des Mecaniques Verdol (France). BP 726 524, March 16, 1955. Through *BCIRA 35:* 598 (1955).

Self-threading shuttles.

D. D. Young and J. Robinson (to Urquhart Lindsay and Robertson Orchar Ltd). BP 726 779, March 23, 1955. Through *BCIRA 35:* 598 (1955).

Power loom shuttle box.

K. Sakamoto. BP 726 874, March 23, 1955. Through *BCIRA 35:* 599 (1955).

Jacquard mechanism for automatically controlling the change from one type of pile to another in the weaving of pile fabrics.

R. Davies (to Carpet Trades Ltd). BP 726 904, March 23, 1955. Through *BCIRA 35:* 598 (1955).

Making of a double weaver's knot on a netting loom.

Drummondville Cotton Co. Ltd. BP 726 975, March 23, 1955. Through *BCIRA 35:* 599 (1955).

FABRICS C 4

Industrial protective clothing made from a base fabric coated by dipping with a polyvinyl chloride plastic.

T. H. Ashley and G. Gee (to James North and Sons Ltd). BP 726 922, March 23, 1955. Through *BCIRA 35:* 599 (1955).

Velvet type fabric and method of producing.

G. de Mestral (to Velcro S. A., Switzerland). USP 2 717 437, September 13, 1955.

Knitted pile fabric.

G. E. Herrnstadt (to Firth Carpet Co., Inc.). USP 2 718 132, September 20, 1955.

Woven elastic web.

J. V. Moore (to Moore Fabrics, Inc.). USP 2 718 244, September 20, 1955.

Elastic shoe gore.

J. V. Moore (to Moore Fabrics, Inc.). USP 2 718 905, September 27, 1955.

Method of making non-woven fabric using air currents.

K. J. Harwood, C. H. Hogue, H. J. Le Dain and R. N. Sabee (to International Cellucotton Products Co.). USP 2 719 337, October 4, 1955.

Pile fabrics.

F. P. Groat (to Magee Carpet Co.). USP 2 719 541, October 4, 1955.

Multiple ply fabric.

J. A. MacIntyre (to U. S. Plush Mills, Inc.). USP 2 719 542, October 4, 1955.

FINISHING AND CHEMICAL PROCESSING D

CHEMICAL PROCESSES D 1

Hypochlorite bleaching of nylon.

N. V. Onderzoekingsinstituut Research (Netherlands). BP 725 953, March 16, 1955. Through *BCIRA 35:* 603 (1955).

Process for improving the snag resistance of nylon hosiery.

Commonwealth Scientific and Industrial Research Organization (Australia). BP 726 263, March 16, 1955. Through *BCIRA 35:* 604 1955).

Composite sheet material for motor vehicle upholstery from a fibrous base material impregnated with a mixture of rubber and a novolak resin.

A. M. Hall and E. H. Walton (to B. B. Chemical Co. Ltd). BP 726 657, March 23, 1955. Through *BCIRA 35:* 604 (1955)

Antistatic treatment and treated products.

E. A. Vitalis (to American Cyanamid Co.). USP 2 717 842, September 13, 1955.

Process for degreasing wool and the recovery of wool grease.

D. P. Norman (to Pacific Mills). USP 2 717 901, September 13, 1955.

Lacing guide for yarn treating apparatus.

G. M. Allen and H. J. McDermott (to American Viscose Corp.). USP 2 718 136, September 20, 1955.

Antistatic treatment of fibrous materials.

L. A. Fluck and A. L. Logan (to American Cyanamid Co.). USP 2 718 478, September 20, 1955.

Range for the continuous washing of cloth.

H. R. Wilcox (to Riggs and Lombard, Inc.). USP 2 718 773, September 27, 1955.

The stabilization of protein-containing textiles and the resulting products.

B. B. Kine (to Rohm and Haas Co.). USP 2 719 072, September 27, 1955.

Process for the manufacture of highly water absorbent, flexible, porous, nonwoven fabrics of high tensile strength and abrasion resistance.

C. L. Nottebohm (to Pellon Corp.). USP 2 719 795, October 4, 1955.

Nonwoven fabric.

C. Ludwig (to Pellon Corp.). USP 2 719 802, October 4, 1955.

DYEING AND PRINTING D 2

Method of dyeing polyacrylonitrile fibers.

E. E. Lowe (to Purdue Research Foundation). USP 2 717 823, September 13, 1955.

Printing of textile pieces and bonding the textile material to the table with a permanently tacky, water-repellent polymer.

A. Koebner (to Lankro Chemicals Ltd). USP 2 719 101, September 27, 1955.

DRYING D 4

Radiant heating apparatus.

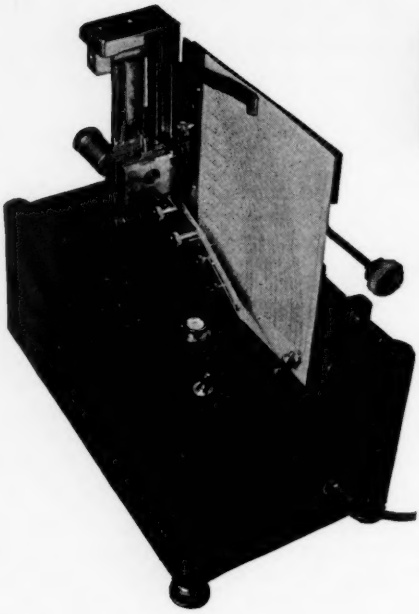
L. H. Mansell. BP 726 188, March 16, 1955. Through *BCIRA 35:* 605 (1955).

TESTING AND MEASUREMENT E

FABRICS E 3

Apparatus for testing wear resistance.

H. T. McLean (to General Electric Co.). USP 2 718 779, September 27, 1955.



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